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Electricity on the Farm

October 1927

Electric Lights Ease Up Farm Chores

See page 8

The Last Long Turn

THERE is always the separator, the woodpile, or the pump to add another hard job at the day's end—before electricity comes to the farm.

Then for a few cents an hour little motors do these tasks. They run the separator, saw wood, and pump, and they help in the house.

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If you are on an electric line or hope to be soon, ask your electric power company for a copy of the G-E Farm Book which explains many uses for electricity on the farm.

GENERAL ELECTRIC

The above cartoon was inspired by the now established fact that a REGULAR SCHEDULE of proper artificial lighting greatly stimulates winter egg production.

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TORK COMPANY, 12 East 41st Street, New York

Electricity on the Farm

Vol. 1 OCTOBER 1927 No. 4

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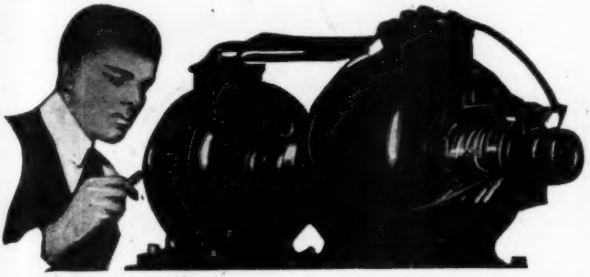

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Electricity on the Farm

Vol. 1 OCTOBER 1927 No. 4

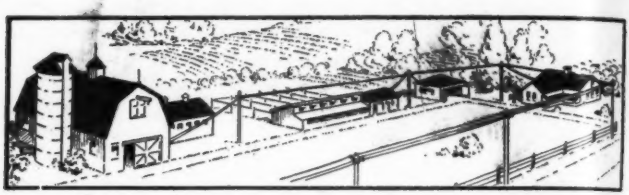
OF all applications of electricity on the farm none is more pleasing to the farmer than the lighting of yards and outbuildings.

The lighting itself actually encourages one to do more work. And such is not at all surprising, for a similar result was found with the advent of electricity in factories. It has been almost a universal experience of industrial establishments that when good lighting was provided better work was done and more of it. Nothing is more desirable to a good workman than satisfactory light which makes it possible for him to see exactly what he is doing.

The farmer is frequently encouraged to do odd tasks around after hours which he would not think of if he had to depend upon the old hand lantern as the sole source of light. A broken piece of machinery is repaired and is ready for work the next morning rather than having the job put aside until daylight comes around.

In the barn and stable electricity not only affords light, but it also makes possible the use of devices which would not otherwise be commonly employed. As an example, consider the convenience of having water under pressure in the stable or cow barn, clipping machines for cleaning off the milch cows, electrically operated feed grinders and the score of other appliances which are finding profitable use on the progressive farm.

No wonder those farmers having properly electrified farms are so enthusiastic about the benefits of electric current.



The Electrified Farm Provides Not Only for Lighting of Farm Buildings, but the Yard as Well

Electric Lights Ease Up Farm Chores

They Save Time and Make Working Around the Farm Buildings After Dark a Pleasant Task

PROBABLY the least agreeable work around a farm are the evening chores, particularly when they must be done after dark. Whether it be cleaning the stable or cow barn, feeding the stock or milking, farm work after dark is not at all attractive. This particularly applies to the farm youths who are acquainted with good lights through familiarity with town lighting after dark.

Evening chores are a pleasure where proper light is provided. Farmers who have electricity available almost without exception provide yard lighting. Lighting here eliminates the uncertainty—stumbling over the misplaced plow, the barking of shins against a momentarily forgotten machine — resulting from the plunge into darkness when leaving the lighted house or barn.

The turning of a switch, or the pushing of a button, immediately lights the way from the house to the barn. Upon arriving at the barn or other farm buildings, the operation of another switch provides light right where it is needed.

Prompt completion of tasks, better cleaning of the farm buildings, and better work all around is the result.

Yard lighting has the additional advantage of discouraging night prowlers. The marauder who finds himself suddenly enveloped in a flood of light, realizes that he has become an easy mark for the watchful farmer, and usually flees at top speed. The yard lighting system may be connected so that a single switch within the house will turn on all the lights. In truck gardens, orchards, vineyards, and poul-

try houses electric lights will prove valuable.

A sudden flood of light at the poultry house, when the poultry are being disturbed at night usually eliminates the cause of disturbance.

Rules for Lighting

As to lighting of barns and stables, a few simple rules

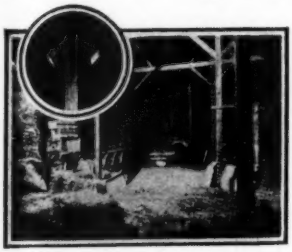


Photo courtesy of G. E. Farm Book

Electric Lights in the Mow and on the Barn Floor Promote Safety as Well as Convenience. Note the Angle Reflectors

should be observed. If the ceilings are unfinished, and are dark in color, proper reflectors must be used to secure the maximum results from the lighting units. On the other hand, if the ceilings are whitewashed the reflectors may be dispensed with.

Where the ceilings are low and are not whitewashed, it is better practice to use a number of small lights than a single large one. This will distribute the light over the entire building without increasing the cost of operation.

Types of Lights

Clear bulbs have heretofore been favored for farm building use due to the fact that they are easily cleaned off when covered with dust. The old type of frosted bulb, with the frosting on the outside, was a dust collector and once it became thoroughly dusted it was hard to clean with the usual dusting rags found around farm buildings.

However, with the advent of the frosted light having frosting on the inside of the bulb this difficulty was removed and the new frosted light is gaining in popularity for farm use as it does not produce the glare characteristic of the clear bulb.

Convenience Outlets

In having the stable and cow barn wired, be sure to provide

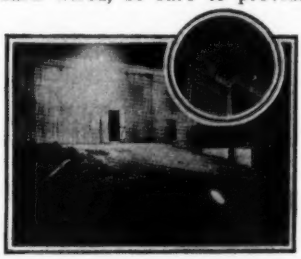


Photo courtesy of G. E. Farm Book

The Value of a Lamp in Front of the Barn Door Is Evident

at least two convenient outlets in each building. These may be used for a number of purposes, such as operation of clipping machines, etc. On dairy farms the electric clipper is increasing in use for it proves an effective aid in keeping the cows clean, with the result that the milk is also cleaner when it is brought into the separating room.

It has been asserted by those

familiar with farming that the use of electric lights around the farm buildings will decrease the time of chores by one-third. This may be an over optimistic estimate. Nevertheless the fact remains that electric lights do cut down the time of doing chores appreciably and, what is far more important, make the work around farm buildings after dark comparatively pleasant.

Simple Safety Rules for Electricity

Common sense is all that anyone need use in order to keep electricity in its place on the farm or in the farm household —the safest, most faithful and dependable of servants. Here are 10 simple rules that constitute common sense:

1. If a fuse—the electrical safety valve—blows out you are overloading your wiring system or using a defective appliance. The trouble is not corrected by screwing in a larger fuse. Fuses of 15-ampere capacity are ordinarily large enough for house circuits.

2. Do not try to install additional wiring unless you are an electrician. Your best insurance against fire is good wiring properly installed.

3. Wires must never be tacked to walls or baseboards or hung on nails. If the insulation wears through there is trouble.

4. Use porcelain not metal, sockets in bathrooms and in basements so that if a person standing in water or on a damp floor touches one, there is but slight possibility of shock from a defective device.

5. Do not handle electrical appliances when any part of your body is touching water piping or other plumbing or a grounding source of any kind.

6. Never set electric irons on combustible material. Always use the metal stand or rest that is provided.

7. Lamps in clothes closets should never be left burning when the door is closed. Use an automatic door switch or a pilot light.

8. Never use irons or toasters to warm beds in winter. Heating pads are made for the purpose and are safe.

9. Have all appliance cords repaired or replaced when they become worn.

10. If the standard length cords on lamps, heaters and other portable appliances are not long enough, do not clutter up your buildings with extension cords. What you need is more wall or convenience outlets.

Regulating the Flow of Electricity

Homes that use an electric range as well as an electric water heater on one wiring circuit can guarantee the range full voltage by using an automatic "peak limiter" switch to be installed beside the meter. When both the range and the heater are in use at the same time and all of the heating units in the stove are turned on, if the cooking load is too heavy, the limiter automatically cuts off the heater.

Our New Advisory Editor

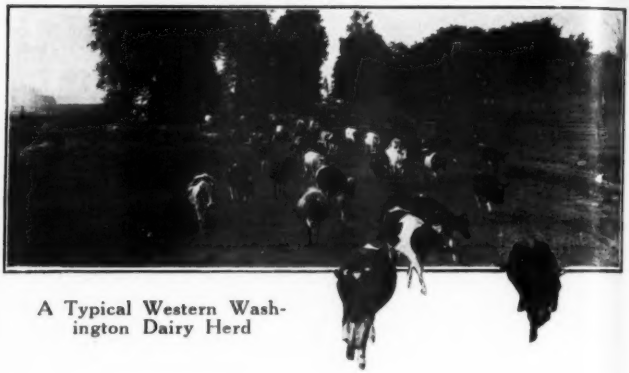
ELECTRICITY ON THE FARM takes pleasure in announcing the addition to its staff of Mr. T. A. Wood, as Advisory Editor.

Mr. Wood hardly needs an introduction to the farm field. He is known from coast to coast through his work in connection with the California Committee on the Relation of Electricity to Agriculture, with which committee he served as Field Engineer. During his connection with this committee Mr. Wood conducted extensive experiments on various electrically operated farm equipment including:

Stationary orchard spray plant; electric poultry brooder; electric walnut dehydrater; electric dairy equipment sterilizer; electric water heater; radiant poultry brooders (heat distribution); vacuum cleaners for poultry houses; power for farm shops, and most of the other commonly used electrically-operated farm appliances.

And when it comes to agriculture, he is no theorist but, instead, is a thoroughly experienced farmer. He was born and raised a farmer. Mr. Wood graduated as Electrical Engineer from the University of California in 1920. Since his graduation he has spent six years in industrial engineering, five years of which were in connection with electric service corporations. For two years he served as engineer for the California Committee on the Relation of Electricity to Agriculture. He owns and operates three ranches of his own in Madera County, and has an interest in a fourth, so that he is particularly well fitted to speak with authority on the subject of electricity and its use on farms.

ELECTRICITY ON THE FARM feels that the acquisition of Mr. Wood's services is a big step forward, for what he says in connection with the application of electricity to farming is the result of very wide experience in that line, and his advice will prove mighty valuable to farmers who are fortunate enough to have electric service or who may contemplate its future use.



A Typical Western Washington Dairy Herd

Replacing Dairy Help W

Much is Accomplished with Little Hired Help on Dairy Farms.

By J. SCOTT

THE far West has frequently been credited with more progressiveness than other sections of the country, and this applies particularly in so far as the use of electricity in farming is concerned. The two instances described below by Mr. Scott are typical ones, and they illustrate quite strikingly how electric current is able to reduce the work around these types of western farms and thus eliminate the hired help problem.

"I wouldn't be without that apparatus for anything. I've used it three years and can recommend it to any dairyman." Mr. J. D. Ringstorf, who operates his dairy farm about two miles from Enumclaw, Washington, is responsible for the above statement. It was upon the occasion of a recent visit I made to his place and he was telling me all about the electric water heater in his milk house.

Enumclaw is a very attractive little town of some 2500 people in Western Washington. Lumbering and dairy farming are the two principal industries of the territory surrounding the town.

The water heating system that Mr. Ringstorf referred to is a 30 gallon water tank such as is used for hot water systems in

Mr. and Mrs. J. D. Ringstorf on the Front Porch of their Brookside Farm, near Enumclaw, Washington.

W lectricity

homes. The one here referred to has a 600 watt electric water heater attached to it. The tank is insulated, with a heat insulating material, so that heat losses are reduced. In other words, more of the electric energy of the heater is confined to heating water rather than heating the room or building. Such an arrangement, if properly insulated is at least 50% more efficient than one that is not insulated.

Hot Water on Tap

"Plenty of steaming hot hot water," continued Mr. Ringstorf, "always ready, is a wonderful help in the milk house. No fires to build, no kindlings to get; and no dirt and dust, from ashes and fuel, around the milking utensils. That is what I like about this electric heater.

"We use electricity for a lot of things around here, and we wouldn't be without it. Besides electrical appliances in the house and lights in the barns, we use it to run the milking machine.

No More Hand Milking

"I wouldn't think of going back to hand milking now. I milk in about half the time, with the machine, that it takes hired men to milk by hand. We installed the milking machine in 1916 and I wouldn't be without it for anything."

Mr. Ringstorf told me he keeps about 32 head of Jersey milch cows which have been bred pure for the past 16 years.

There are 138 acres in his farm. Sixty acres of it are cleared, and in this field he raises clover and timothy hay and sunflowers for silage. It produces about three tons of hay to the acre, which is cut in July. Then the cows are pastured on the same land through

the remainder of the summer, fall and winter until the next April.

Electricity Saves Labor in This Dairy

Anything that I might say about the many ways in which electricity can aid the dairyman and his family to be more prosperous and make life more pleasant for him would not be complete without including my talk with Mr. Peter Halkjar, dairyman, who lives near Enumclaw, Washington.

"I figure," said Mr. Halkjar, "that the electricty on this farm takes the place of a hired man in the labor it does for myself and my wife, and does it at much less cost. This two horsepower electric motor runs the milking machine and also pumps all the water we use on the farm from that well, which is 110 feet deep. We have water piped into the house, and it takes a lot of it when there are three young children in the family. We also have an electric cream separator, electric washing machine, electric iron, electric cook stove, and other small appliances in the house. We have electric lights in the cow barn, horse barn, the hog house and in the barn lot, too."

A Big Household Help

Mrs. Halkjar is just as enthusiastic about electricity as a time and labor saver as her husband is. "I don't know what we would do now without it," he said, "because it makes everything so much easier."

"The electric washer, stove, and other things are quite a labor saver," Mr. Halkjar told me, "but there is nothing that helps more than the milking machine. We have used ours continually for six years and these records, which I keep, of all my cows will show you that cows will give more milk when milked by the right kind of a milking machine, than when milked by hand."

Electric Milkers Increase Production

The milk record book was handed to me, and I picked records at random of four cows and studied them carefully. The milking machine was installed in April, 1920, and here are the subsequent records of the four:

Mary gave 8,074 pounds of milk in 1919, 8,623 pounds in 1920 and 10,621 pounds in 1921.

Cherry gave 12,762 pounds of milk in 1919, 11,991 pounds in 1920, 13,690 pounds in 1921, and 18,200 pounds in 1922.

Mollie gave 10,751 pounds of milk in 1919, 13,426 pounds in 1920, and 19,118 pounds in 1921.

Countess gave 7,639 pounds of milk in 1919, 10,713 pounds in 1920, and 11,193 pounds in 1921, and 16,279 pounds in 1922.

Mr. Halkjar said he believed that milking by machine in comparison to milking by hand was largely responsible for this gain in milk.

"I bought two cows from a neighbor and when I told him I was going to milk them by

machine, he thought sure I would dry them up. They increased in their milk.

Cows Like Milking Machines

"The reason for cows giving more milk with a good up-to-date milking machine is that they are so much more comfortable while being milked, once they become used to the machines —which usually takes about two weeks. They do not have to stand with each foot just so, as they do while being milked by hand. If they want to move their feet and legs, they can do it without fear that someone will object. They can switch their tails any time they want to. All these things help to make cows more comfortable, and a comfortable cow will always give more milk than one that is not.

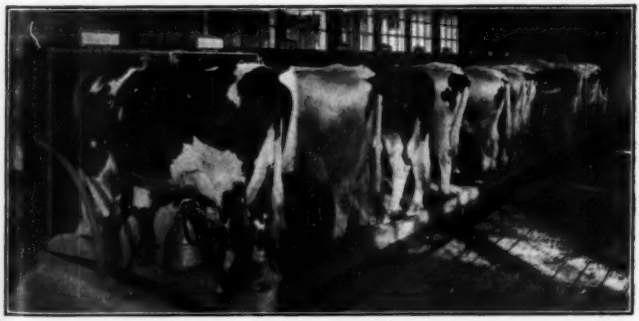
"The milking machine saves much time and makes the work easier, but electric lights in the barns and barn lot save more time than you can realize. Instead of carrying a bucket in one hand and stumbling along with a lantern in the other hand, I carry two buckets. All chores can be done much quicker when one can use both hands and can see everything he is doing.

Other Uses for Current

"At farrowing time, I leave the electric light on all night in the barn where the sow is. This practice has saved me many pigs, and also saved me the worry of a lantern setting fire to the barn."

Mr. Halkjar came to this country from Denmark 24 years ago. He started working for wages. After a while he bought forty acres of stump land. He and his wife cleared the land and made a very attractive farm and home. If they can get someone to run the place next year, they intend to visit their old home in Denmark.

(*Continued on page* 37)



Milking Cows with an Electric Operated Milker at the Western Washington Experiment Farm, Puyallup, Washington

The Cadmus Farm Home showing the small pump house in the rear which houses a very efficient electric water system.

Lets Electricity Do Her Work

Florida Farm Wife Gives Credit to Electricity for Lightening Her Tasks

By RUTH WOOD CADMUS

WHETHER it be up in Maine or down in Florida, one thing is certain—electricity does make the life of the farm housewife far more endurable and enjoyable. Greater happiness and contentment follow the use of electricity. Our readers will be interested in hearing the experience of a southern farm woman, who, in the following article, gives her impressions of the value of electricity around her farm home, which is located in Florida.

Coming to a farm, a country house, after city conveniences and luxuries that had been taken for granted, we were agreeably surprised to find that our Florida home was quite modern, being wired for lighting and phone.

As a family we own one toaster, one vacuum cleaner, two grills, a small electric plate, one electric curling iron, so we were delighted to learn that the former owner had been accustomed to his comfort and convenience, and believe in utilizing modern aids to home keeping.

A few months after our arrival, we had a second meter put in to be rated for power current as we then using electricity to start and maintain our motor which pumped water into the reserve tank for household and farm use. We were thus enabled to enjoy the use of the

"We feel that we have, for a farm home almost two miles from the heart of Dade City, a most modern and efficient place to live and we give the credit for the lightening of labor for the farm wife, to our excellent electrical equipment.

"I do feel that every farm that is at all near to a power line, carrying electrical current, should contain at least several of the many labor savers for the woman.

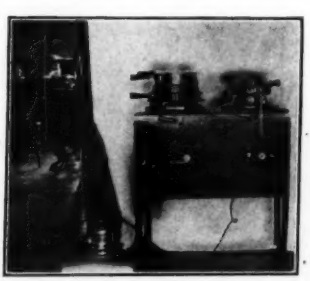
It will mean a great advance to the future generations and great stimulus to mental development."

vacuum cleaner, and other power accessories at a lower rate. In our section of the country we have two scales of rates—one for lights and one for power.

The Pump is Appreciated

A year after our arrival we put in a power plant using city current to supply running water to the house, and do away with the ugly tank, and also give us the benefit of fresh water instead of the water that might stand in the tank for several days. Now we have an unfailing supply of clear, fresh water, and the pump is automatic so that we do not have to remember to pump, so that we can have water when we wish it.

We believe that we have an efficient home, although we do live on a farm. Some friend told us not so long ago that she was so impressed with our modern home that she went back and told her husband how up-to-the-minute we country folk are! He in turn grew excited and passed on the report that we were so absolutely modern



Electric fireless cooker and two appliances—a waffle iron, and a grill. The cooker is automatic, a tireless, silent "maid." I have used it over three years, used it steadily and consistently and it is as good as new.

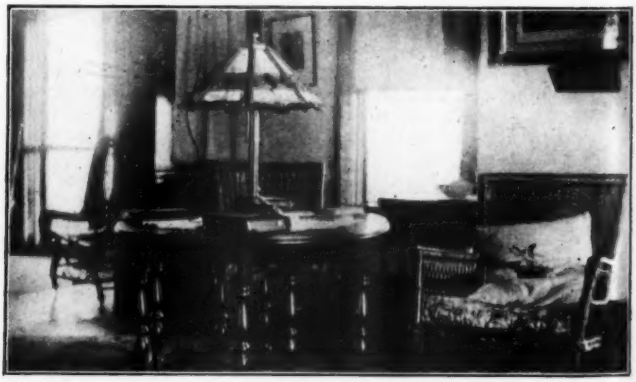
we even had "electric water!"

We installed as a kitchen and household aid, just after we came to the country to live, an automatic electric fireless cooker that receives our meals in the raw, cooks them perfectly, automatically cuts off the current at the proper temperature to continue cooking, and gives us our food in edible and palatable condition. This fireless cooker is inexpensive, practical, and labor-saving, as well as eliminating a lot of unnecessary heat in summer. The kitchen never gets hot and unbearable as with a gas or kerosene stove. Meals may be prepared early, placed in the cooker, and forgotten until the meal hour. It was most reasonable and has worn well, this being the third summer for its use, and it gets steady, consistent use, too!

I know that farming in this day and age is lightened immeasurably because of the boon of electricity. The modern twentieth century housewife, whether she be country or city, looks for the aids to housework that will allow her to do everything practically, perfectly, and properly, yet allow her, too, some time for rest and recreation which she so justly deserves.

A Lady Bug Incubator

Hatching lady bugs in potatoes is aided by electric heat to keep the cellar hatchery at a uniform temperature of 80 degrees Fahrenheit. The bugs are then loosed in grape vineyards where they consume mealy bugs and aphids, enemies of the grape crop. And as one of the leading engineers of the rural electrification movement remarked, "More lady bugs should be incubated."



Interior View of Our Living Room—Note the Good Looking Electric Lamp on the Gate Leg Table—Just One of Our Comfortable Reading Lamps

Feed Grinder in Operation at the Stanley Wild Farm Near Spencerport, N. Y.

Electric Feed Grinding a Time Saver

A FEW years ago, when electrically-operated feed grinders for use on farms were first developed, there was some doubt as to whether or not they would prove economical. The cost of having the food ground at the mill was considered moderate and it was believed that the current on the farm alone might cost as much for grinding feed as it would cost to have it ground in the town mill.

A great deal of attention has been devoted to this subject during the past few years and it has been definitely established that electric feed grinding for farm use is both economical from the standpoint of cost of grinding feed and in addition it saves time for the farmer.

Time and Labor Saved

Where the farm has its own feed grinder, there are no more journeys to the mill to have the feed ground, so the farmer is saved this time formerly required to transport grain to town and then haul the ground feed back.

Furthermore, feed grinders

have been developed to operate on comparatively small motors so that they are suitable for connecting to any farm installation.

The illustration above shows an installation on the farm of Stanley Wild near Spencerport, N. Y. Here is a grinder and elevator operated by a 1½ H. P. motor.

Current Consumption

While this equipment is apparently giving complete satisfaction, it is too early to provide any figures as to the amount of current required. However, in another case in New York state a farmer is grinding oats and barley to a suitable fineness with an energy consumption of 18 kilowatt hours per ton and still another is grinding feed, oats and barley at a rate of 300 pounds per hour with an energy consumption of 26 kilowatt hours per ton.

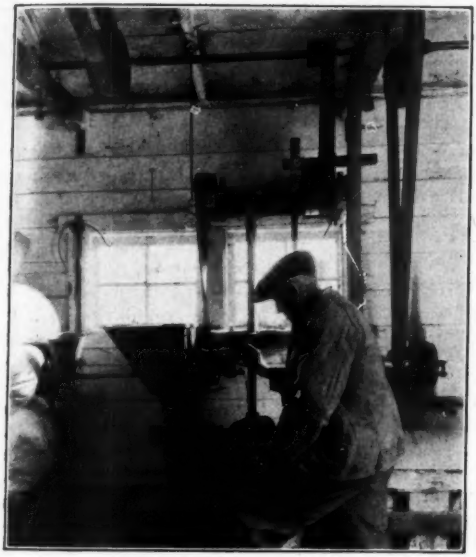
Feed Grinder Connected to a Motor, So Placed That Motor May Be Used for Driving Other Equipment

In comparing electric grinding on the farm with mill grinding, there is more than the cash outlay to be considered, as noted above. Getting the grain ready and carting it to and from the mill takes time and therefore means expense. In business the difference between profit and loss is often made up of small items of this kind. Then there is also the matter of convenience. The electric motor—always ready to prepare freshly ground food possessing the maximum food value—is available at a moment's notice.

Some farmers are using a small chore motor to operate their feed grinder, the motor being used for a number of other purposes beside food grinding.

Also besides his time saved there is no loss by weight due to hauling and dumping and sacking at the mill. By mixing his own grains he saves considerable per ton in cost.

Electric water heaters are to be had for attachment on any tank either in a house cellar or kitchen. They are variously equipped so that they may be switched on or off at will, heating water only when desired, or connected up to a thermostat on the tank in such a manner that they maintain a fixed water temperature continuously, going on and off automatically. The switch or push buttons controlling these heaters can be located anywhere in the house.



Here we see James A. Moor mixing wet mash by power-driven machinery of his own construction. Note the root grinder and meat chopper attached to the same line shaft.

Western Poultryman Has Labor-Saving Plant

As a rule poultrymen are concerned about the price of eggs, and that of course, has an important bearing on the success of their business, but equally important is cost of production. James A. Moore, poultryman at Puyallup, Washington, has a lively appreciation of keeping down over-head expenses, and has given considerable thought and attention to this phase of his business, which is directly within the control of the individual. That he has succeeded may be judged from the fact that, without additional help, he takes care of a flock of 2,000 birds with less hard labor and time than many poultrymen with much smaller flocks.

Most conspicuous of his labor and money saving methods is his system of handling feeds. On his attractive 5-acre ranch on the outskirts of the village, is a miniature feed mill that he constructed himself. In this

mill he elevates and grinds his grain, cuts straw and alfalfa and mixes his own mash by devices of his own construction. This system not only saves labor, but reduces his feed bill to the tune of about $20 per ton, and incidentally he knows exactly what his birds are eating.

Two Hundred Pounds an Hour

This feed house has a capacity of 22 tons; it grinds 1275 pounds of grain in 5½ hours and the elevator will handle 2800 pounds of wheat or corn per hour, and the feed cutter will cut five bales of straw in the same length of time. When this equipment was first installed Mr. Moore powered it with a gasoline engine, but so unique were the methods and layout and so effective in results, that the Washington Committee on the Relation of Electricity to Agriculture decided to electrify the plant. With Mr. Moore's consent the Committee installed a three horse power General Electric motor, which was belted to a line shaft, which, in turn, was belted to an elevator, feed chopper, root cutter, wet mash mixer and feed cutter.

"I certainly favor the electric power," commented Mr. Moore. "It costs no more than the gas engine to operate and all I have to do is to turn a switch and go on with my other work."

Similar equipment can be made by most poultrymen, the only requirement being a knowledge of how to figure speed and size of pulleys. Obviously it is impractical in a short article to give complete construction details of the equipment and layout, but for the benefit of those who wish to duplicate Mr. Moore's outfit or adapt it to their own needs, the Washington Committee on the Relation of Electricity to Agriculture has made blue-prints and specifications, which may be obtained by writing to L. J. Smith, Secretary, at the Washington State College at Pullman, Washington.

Mixing the Mash

Most poultrymen mix their wet mash by hand—a long and tedious job. Not so with Mr.

James A. Moore, poultryman at Puyallup, Washington, has a lively appreciation of keeping down overhead expenses, and has given considerable thought and attention to this phase of his business, which is directly within the control of the individual. That he has succeeded may be judged from the fact that, without additional help, he takes care of a flock of 2,000 birds with less hard labor and time than many poultrymen with much smaller flocks.

Moore. He demonstrated to the writer how easy this operation is with the proper equipment. He mounted an ordinary galvanized iron washtub on a turntable supported by rollers mounted on the outside and turning on a pivot in the center, the entire outfit being rigged up on a push truck. This truck he rolled under a spout, pulled a sliding panel and a day's feeding of mash dropped into the tub. This was then moved to the mixing equipment, which consisted of an upright shaft to the lower end of which was fastened 1½ inch gas pipe in the form of a "U" (inverted), as shown in the accompanying photograph. This pipe formed the prongs of the mixer. The U-shaped prong has a collar and a cotter bolt extending through the collar and shaft holds it in place. The mixing prong can be moved up or down on the shaft, so that it may be put in or taken out of the wet mash at will. As the shaft revolves it turns the mixer and the resistance of the mash also turns the tub, which gives a thorough mix in a few minutes.

At the upper end of the shaft is a bevel gear which drives the shaft at the rate of 40 revolutions per minute.

Grinding Feed

On the same line shaft as the mixer is a feed cutter that Moore uses to cut all kinds of roots. Also on this shaft is an ordinary meat grinder that is used to cut roots very fine for the baby chicks. On the right side of the shaft is an emery wheel used as a tool sharpener.

When Mr. Moore had demonstrated this equipment we went to the loft to inspect his grinding and elevating outfit. He uses a grinder with a six inch burr, which adequately meets his needs of one ton of grain every 12 days. He first places a movable hopper, with a two-inch opening across the bottom, directly over an opening in the floor. This hopper is shown in the accompanying illustration. Into this hopper he empties his whole grain, which passes through the slot in the bottom to the elevator pit, from whence it is elevated to the feed mill hopper overhead. The purpose of this operation is to enable him to mix his grain, if he desires, before it is ground. This operation is so timed as to give the grinder a constant supply of grain as fast as it will take it, but no faster. From the mill the ground feed may be diverted to anyone of several bins, by gravity.

Advantages of Elevator

This system of elevating his grain enabled Mr. Moore to extend the walls of his bins almost to the roof. There is no lifting of heavy grain sacks more than two feet from the floor, which is a welcome relief from drudgery. Moore uses the same power for operating a straw cutter to provide litter for baby chicks, and with this equipment also makes his own alfalfa meal, using the third cutting of alfalfa.

Mr. Moore's records show that over a period of three months he ground 7,650 pounds of wheat and corn, consuming during that period 108 K.W.H. (kilowatt hours). He stated that about 12 kilowatt hours of electricity is required for each 1,275 pounds of grain ground. The balance of the power was used for elevating, mixing machinery and feed cutting.

Moore figures that his poultry mash costs him only $40 per ton, and the saving in time and labor is considerable. The electric motor needs no attention during the operations, and after he fills the hopper and turns on the switch he can be away from the mill on other duties for 2½ hours.

James A. Moore, Puyallup, Washington Poultryman Saves About $20 Per Ton by Grinding His Own Mash. Here He Is Shown Emptying Grain Into the Movable Hopper Placed Over An Opening in the Floor, From Whence the Grain Is Elevated to the Feed Mill Overhead.

The entire layout cost only $263.25, without figuring the power equipment. Following is the bill of materials used in the construction of the outfit:

Belting:

40 ft. x 4 in., at 35c per ft.	$14 00
70 ft. x 3 in., at 35c per ft.	24 50
70 ft. x 2 in., at 20c per ft.	9 20
37 ft. x 1-3/16 in. shafting	5 55
17 pulleys, average $3 each	17 00
30 elevator buckets, at 20c each	6 00
2 adjustment bearings for elevator	7 50
1 feed grinder	14 00
1 tool grinder	7 50
1 wet mash tub on wheels	10 00
1 mixing machine for wet mash	15 00
1 Banner root cutter.	7 50
Estimate on labor of installation	75 00
Total	$263 25

Up to the present time much time and thought have been given in developing good poultry houses and proper feeding mixtures to give maximum production. It would seem from the results obtained on Moore's place that by the use of power-driven equipment the poultryman will be enabled to care for much larger flocks than he has heretofore been able to do. This obviously means not only greater production per man hour of labor, but also taking the burden of some of the heavier jobs off the poultryman.

Besides caring for a flock of 2,000 birds for commercial egg production, Mr. Moore operates a 12,000 egg hatchery, and produces 3,600 day-old chicks every twelve days during the hatching season.

Machine Beats Sun In Drying Nut Crop

Nut growers in the United States have found one more way to beat Nature at her own game. They now dry walnuts by electricity in 24 hours instead of waiting weeks for sun and wind to do it by the method used previous to the past season. This enables them to ship to market when the market is ready. More than 35 per cent of the California walnut crop was dried by the new means in 1926 and a greater proportion is expected this year.

Most walnuts are harvested green when the hulls begin to split open. They are then gathered up in sacks and dumped into the hoppers of the drying machines. Steady blasts of electrically heated air are fanned through the hoppers at a temperature of 110 degrees. Nuts before drying contain about 25 per cent moisture, most of which—about 400 pounds per ton—must be sweated out in order to make the nuts saleable. The swift method of doing it reduces the moisture content to the desired point without overdrying some and leaving others underdried as did the sun-and-wind process.—S. E. D. Bulletin.

The Electric Hotbed Is of Real Value to the Farmer and Gardner in Starting Plants Where Bottom Heat Is Necessary, and Has Many Advantages Over the Horse Manure Method. This is the First Experimental Box Used by F. W. Griffith At His Nursery at Puyallup, Wash.

This Electric Hotbed is Easy to Make

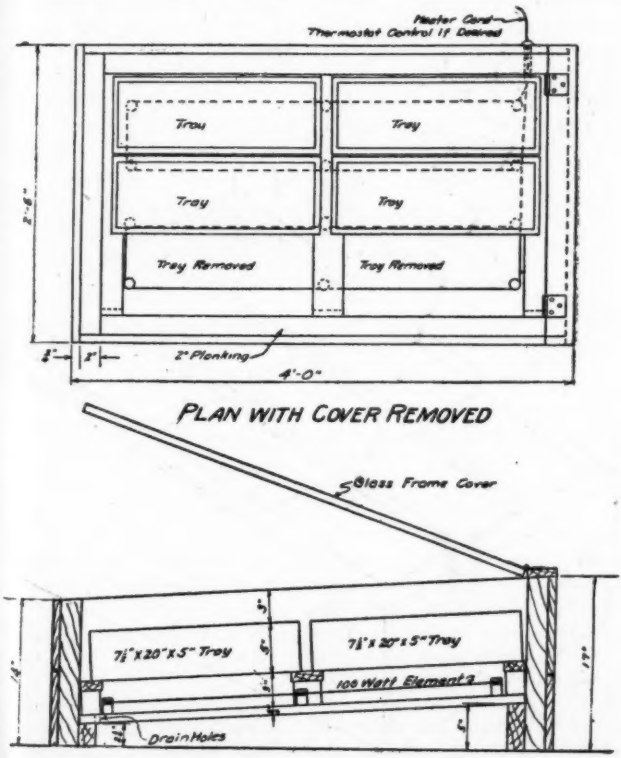
By M. E. BRIDSTON

THE gardener or nurseryman who has electricity available would do well to consider the use of electric current in furnishing bottom heat in the hotbed. This has many advantages over manure and is entirely practical as has been demonstrated by Glen Cushing of Puyallup, Wash. Nurserymen have found it especially valuable, for with the electric hotbed it is possible to start and root plants in three months that took two years by the old method. All manner of plants are being rooted with electric heat—soft rosewood cuttings

being ready in three weeks.

Is is so simple that anyone can make it—merely electric coils to furnish bottom heat instead of manure. Having absolute control over the bottom heat gives the propagator the means of forcing the root growth just when the cuttings require warmth—and puts within the reach of the small nurseryman the opportunity of rooting those cuttings which are difficult to secure on the market. Every season sees a shortage of lining out plants in certain varieties after the lists are out. The man with the heat box, scans them for his needs and proceeds to root those not otherwise obtainable.

This electric frame is also of great value to the farmer and gardener in starting all kinds of garden plants where bottom heat is necessary. The heat can be controlled to any degree desired, which is very difficult



Sketches Showing Construction of Electric Hotbed

when horse manure supplies the heat.

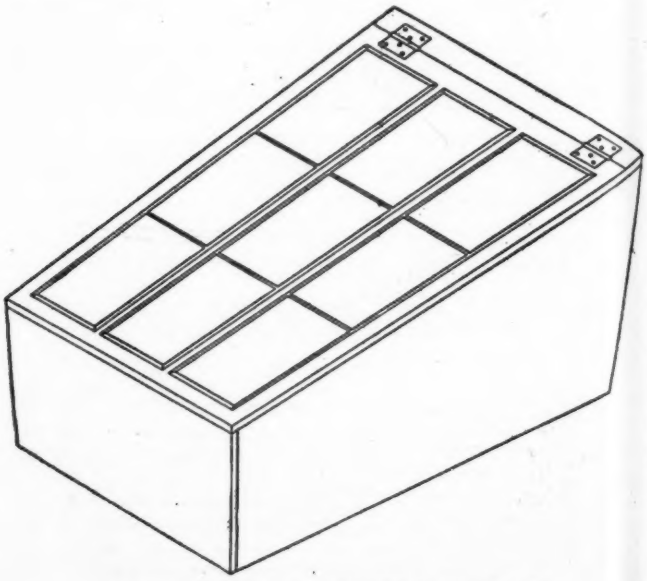
These electrically heated frames may be constructed in any size, from the window box—8 by 18 inches—to many feet dimensions.

The small box heated from the electric light outlet, may be run at a very small cost per month, and the cost of the larger box is relatively low.

The first experimental frame was constructed by Mr. Cushing at the Puyallup Nursery. It is 2½ by 4 feet, and the heat is supplied from an outlet on an electric range. The accompanying sketches give all the necessary construction details. The frame itself is no different from the usual frame, except that a wooden floor is constructed a few inches from the bottom of the frame. To this floor is fastened insulators to which are attached the 100 watt heating elements. The floor should be sloping to provide drainage, with drainage holes at the lower end; or, a metal plate may be placed between the seed trays and the heating elements to catch the drippings incidental to watering the plants.

The seed boxes, or trays, rest on a frame rack, and are removable.

At times, there may be a slight advantage in having thermostatic control of the heat, but this is not essential. However,



Sketch of Electrical Hotbed When Completed

any reliable thermostat will serve the purpose, and thus the propagator will be assured of an even temperature that need not vary over a few degrees.

In speaking of the electric hotbed, J. C. Scott, Agricultural Engineer of the Pudget Sound Power and Light Company, says:

"The electric hotbed which was devised by Mr. M. G. Cushing of the Puget Sound Power & Light Company, is not only a success, but has proven to be far more practical for both farmer and nurseryman than the old manure-bed.

Experiences

"Reporting on their recent experiments with different types of hotbeds, the Washington State Committee on the Relation of Electricity to Agriculture, working in co-operation with the Department of Horticulture of the State College of Washington, Pullman, Washington, says:

"Electrically heated hotbeds are as economical as ordinary manure hotbeds and much more practical, it has been demonstrated at the state college by Professor C. L. Vincent of the Department of Horticulture and H. L. Garver, investigator for the State Committee on Relation of Electricity to Agriculture.

"It is predicted that the electric hotbed will in time practically replace the manure bed, which is now almost indispensable to greenhouse men as well as to the commercial and home vegetable and flower grower. In the large, densely populated cities there are many nurserymen and growers of vegetables who make use of manure hotbeds, but who find it more difficult each year to obtain good manure for hotbed purposes. If the manure has to be hauled long distances or has to be shipped in, the expense becomes prohibitive.

Used at Any Time

"One of the important features about the electric hotbed is that it can be made use of at any time, be it fall, winter or spring, by simply snapping on the electricity. Another important thing is that the heat can be controlled to any degree desired. Even though the cost of installing and operating is a trifle higher than a manure bed, the ease of manipulation, the fact that it is clean and agreeable to work with, and that it can be converted into a cold frame by simply turning off the electricity, makes the trifle higher cost negligible.

Many Uses

"The electric bed can be put to any number of uses. The commercial and farm gardener will find it of use in starting the long season vegetables as well as for the growing of certain vegetables out of season. The greenhouse propagator will use it for the rooting of cuttings; the bulb grower will find it handy for growing his crops;

the window and porch fancier can use it in his business."

"After using the hotbed developed by Mr. Cushing for more than two years, Mr. F. W. Griffith, nurseryman of Puyallup, Washington, is more enthusiastic than ever about its future possibilities.

Good Heat Control

"Having absolute control over the bottom heat," says Mr. Griffith, "gives the propagator the means of forcing the root growth just when the cutting requires warmth— and puts within the reach of the small nurseryman or 'plant bug' the opportunity of rooting these cuttings which are difficult to procure in the market. Every season sees a shortage of lining out plants in certain varieties after the lists are out. The man with the heat box scans them for his needs and proceeds to root those not otherwise obtainable.

"It will be found of great value to the farmer and gardener in starting all kinds of garden plants where bottom heat is necessary. The heat can be controlled to any degree desired. This is very difficult when horse manure supplies the heat.

Different Sizes

"These electrically heated frames might be constructed in any size from the window box —8 inches by 18 inches—to many feet in each dimension. The housewife wishing to root her geraniums or the plant lover desiring to obtain the rare specimen will have the opportunity to gratify that wish.

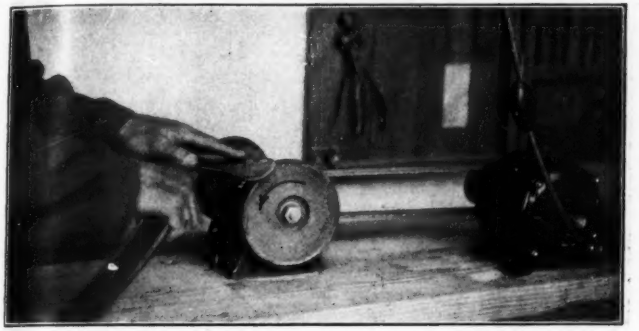
"The small box heated from the lamp outlet might be run at a cost of a few cents per month and the cost of the larger box is relatively low.

"The experiment box at the Puyallup Nursery is 2½ by 4 feet, and the heat is supplied from an outlet on an electric range. During the month of June the extra cost of heat required to warm the frame was less than one dollar.

"All manner of plants are being rooted—soft wood rose cuttings being ready in three weeks. Of course, much experimenting remains to be done, as plants vary in the treatment required to produce the best results. Later a propagating treatise may be available, giving the necessary information to enable the grower to root his own cuttings by this method."

Cost of Delivery the Big Item

The cost of electricity like the cost of coal to the consumer, is largely the price of delivery. Soft coal at the mine could be had for possibly $2.75 a ton, but by the time rail charges and handling have been paid from the mine mouth to the consumer's cellar, the price has tripled. The same thing applies to electricity. Only about 20 per cent of its price is represented by the actual cost of generating it at a power plant. Delivery by wire is expensive.



Grinding an Axe with an Emery Grinder Driven by a ¼-Horsepower Motor

How to Grind an Axe

Power Driven Grinder A Great Time Saver; Some Useful Suggestions

By L. M. ROEHL

N. Y. State College of Agriculture

THE first thing to do in grinding an axe is to look at the edge critically and see if there are nicks in it. If so, it is held on the tool rest in a horizontal position and the cutting edge drawn lightly across the face of the grinder right and left, until it is ground down to the bottom of the deepest nick. It is then placed on the grinder as illustrated above. The electric motor runs the grinder at a rim speed of from 4000 to 5000 feet per minute and the tool need be held on but lightly to do rapid cutting. The position or angle at which to hold the axe depends on the use that is to be made of the tool.

If it is to be used for splitting purposes a blade which is rather thick just back of the cutting edge is desirable. If it is to be used for chopping it will work easier and make deeper cuts if the blade is thin just back of the cutting edge. An axe blade is not ground to a straight bevel as is done with a wood chisel or hatchet, but convex or rounding in shape. If in jointing it down to the bottoms of the nicks considerable metal is removed and consequently much needs to be ground off the sides to get proper results, it may be held firmly on the grinder without

(*Continued on page 37*)

Here Is a Chore Motor Driving a Silage Cutter. It's Just in Such Uses as This That a Chore Motor Proves Its Worth.

INDEXED

The "Chore" Motor—
Your Most Useful Helper

A CHORE motor on the electrified farm is as necessary to the farmer as hands are to a clock. It makes electric power portable.

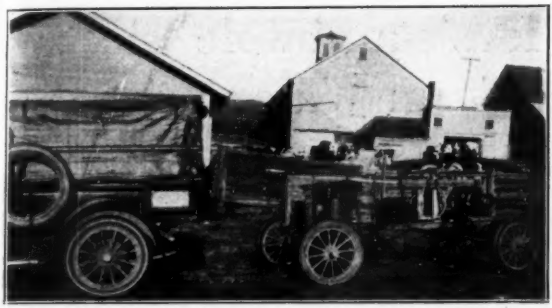
Current may be flowing through the lines at different points on the farm, power may be available at all points, but you've got to have the means of getting this power to do useful work and that is where the chore motor fits in.

Chore motors may be made in a variety of forms but one of the simplest and most effective arrangements is shown in the illustration herewith.

This chore motor is mounted on the running gear of an old Ford touring car, but the front framework of the car is so divided that the working end, mounting the motor, may be placed in any small nook and properly braced to drive the pulley and thereby the machinery.

The chore motor is a comparatively inexpensive proposition but it certainly goes a long way toward easing up on the various tasks around the farm; it puts the power where you want it.

It is an indispensable additional to your farm equipment and is a big factor in developing efficiency in using the electric current supplied you by the power company.



Dodge Commercial Car Towing a Truck on Which Is Mounted a Chore Motor.

Rear End of Old Ford Chassis Bearing Motor. When Truck Is Being Towed From Job to Job the Front and Rear Portions of the Machine Are Fastened Together, and Easily Detached When the Job Is Reached.

Sawing Wood by the Old Hand Method Is Tiresome and Expensive From a Labor Standpoint. But the Chore Motor Will Do the Work in a Jiffy.

Here's a Simple Electric Farm Water System

BY H. J. GALLAGHER

Agricultural Eng. Dept., Michigan State College

A COMPLETE, new electric water system is always best —that is, one which is built complete with pump, motor, tank and other parts included.

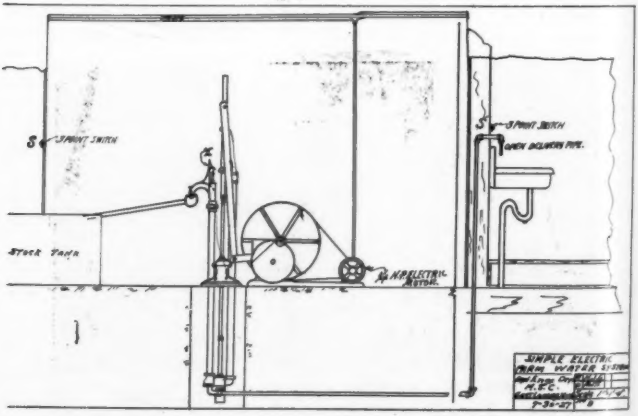
Frequently, however, a farmer who already has electricity available, or is about to secure it, hesitates to use it for pumping water due to the cost of installing a complete new water plant. This should not detain him, as the following article by Professor Gallagher shows.

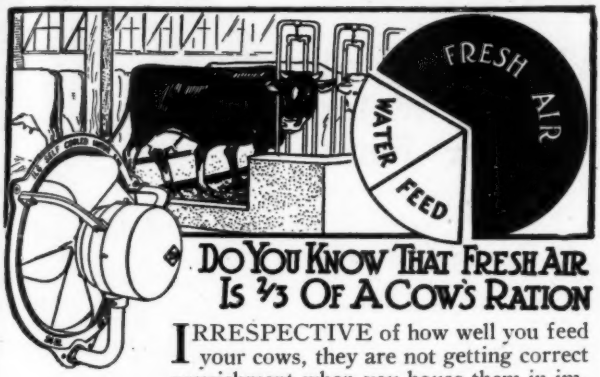
One of the big problems of adapting electricity to agriculture is the using of equipment already on the farm. There are a number of electrically operated pump jacks now on the market that can be used on the farm pump, thus reducing the farmer's investment.

The accompanying illustration shows how the farm home and stock tanks can be supplied with a fresh supply of water at a minimum expense.

This system was designed for a tenant farmer, Harry Donohue of the Mason Dansville experimental line, Michigan. Mr. Donohue wanted running water in the house without investing much money on property he did not own.

The system is very simple





DO YOU KNOW THAT FRESH AIR IS ⅔ OF A COW'S RATION

IRRESPECTIVE of how well you feed your cows, they are not getting correct nourishment when you house them in improperly ventilated barns, because *fresh air is two-thirds of a cow's ration.*

That's why the U. S. Dept. of Agriculture, the farm journals and stock and dairy experts of the country advocate efficient farm barn ventilation to promote healthy and contented cows and a greater milk yield.

Help your Cows Produce more Milk with an ILG

FARM BARN *ELECTRIC* VENTILATOR

The ILG Farm Barn Electric Ventilator keeps the air in your cowbarn fresh, clean and invigorating. It operates electrically, draws out every trace of foul odors and gasses which arise from dung and excretions. No flues or ducts are required. It keeps the hay and grain sweet and fresh, and helps the cattle grow stronger and give more good milk. Made for all Currents.

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For Offices, Stores, Factories, Farm Buildings, Theatres, Restaurants, Homes, etc.

Why You Need Running Water on Your Farm

2.

It Saves Labor

With a Goulds Autowater System to supply running water, your wife can do the dish washing, cleaning and laundry, you can water the stock and clean milking utensils in ¼ the time it now takes —without the backaches and pains that go with pumping and carrying water by hand, and at a cost far less than most people realize — from 2 to 4 cents a day.

Autowater Outfit X, shown above, comes complete. Two capacities: 210 and 420 gallons per hour.

Write today for our Autowater Catalog 15EO, describing all sizes of Goulds Autowater Systems.

Your local power company will be glad to give you information regarding Goulds Autowater Systems.

Goulds Pumps, Inc.
Seneca Falls, N. Y.

It's Safe— Nothing to Spill or Explode

If there are children in the home—the "Utica" should be used for that "Extra Heat." It is absolutely safe, clean and odorless. The sides and base are always cool to the touch and there is no danger even if accidentally tipped over.

Cold air is drawn in at the sides and base—is heated—and forced out through the top—causing a circulation of warm air throughout the room. No heat is lost by radiation through the sides. In fact, the "Utica" is a miniature warm air furnace that may be carried from room to room and plugged in—anywhere.

Low priced and low in operating cost, the "Utica" may be used before it is time to start the furnace—or even after the furnace is "on." It supplies "The Extra Heat That Assures Comfort." Made in two models. Your Lighting Company will supply you—ask them.

Utica Products, Inc.
Dept. E Utica, N. Y.

UTICA
ELECTRIC PORTABLE FURNACE

and cheap. The pump is a common two way windmill pump. The pump jack is designed for an electric motor, the gears, inclosed in a casting, run in a continuous bath of oil, the electric motor used ¼ H.P.

To pump water to the stock tank the lever X on the pump is lowered and switch S at the barn closed. Except when pumping to the stock tank lever X is raised which permits water to flow through the pipe to the house. The pipe to the house is an open pipe, not even a faucet at the sink. The open pipe at the sink protects the pump. On the wall above the sink back is a three point snap switch, similar to the switch at the barn above the stock tank.

How Operated

When water is wanted at the house, the switch S is closed instead of opening a faucet. This starts the motor and a fresh supply of water directly from the well flows at the sink. Either the switch at the barn or house will control the motor to pump water.

A storage tank could easily be added to this system to provide water for the range or furnace boiler, toilet and bath.

COST OF SYSTEM

Pump jack	$17.50
¼ H.P. electric motor	12.50
Switches and wiring material	2.80
Pipe and fittings.....	4.60
Total, not including labor	$37.40

Grinding an Axe

(*Continued from page* 31)

damaging the tool. On the other hand, if only a small quantity of metal needs to be ground off and also when grinding at the cutting edge, heavy pressure will draw the temper and harm the tool. A good way to get the desired shape and also prevent burning the tool is to move the axe back and forth on the grinder and also move the tool right and left. Due to the constant and uniform speed of the grinder made possible by the electric motor any axe can be ground to a fine cutting condition in a fraction of the time needed for the work with a grindstone.

Electricity in Dairies

(*Continued from page* 15)

Mr. and Mrs. Halkjar are getting along fine, and making some money, even in these times of financial difficulty for agriculture. There may be several reasons for their progress. There is no mistake about the fact that both of them are hard workers, thrifty, economical, and know how to operate the farm and care for their stock to the very best advantage. But, in considering all of these reasons for their advancement, it is extremely important to remember what Mr. and Mrs. Halkjar say about how electricity is helping them.

Electricity furnished to farms is of alternating current. City service, which used to be direct current, is gradually changing to AC.

Electricity — and Milk Pasteurization

Treatment of Milk by Electric Current Promises Important Advantages

By N. D. HERRICK

THE usual method of pasteurizing milk has long been known to have its disadvantages, particularly in the effect produced by pasteurization upon the milk itself. There is always danger of destroying the beneficial bacteria along with the harmful ones, and occasionally "dead" milk is the result.

Efforts have been made for several years to develop an electrical treatment for milk which would give the advantages of pasteurization, without the disadvantages. The system described below is a step in that direction, but sufficient data is not at hand to indicate how far it may go.

The Electropure method of sterilizing milk is a comparatively new development and there still remains a lot to be learned as to what it can accomplish. This much, however, may be said about the process: it does kill the harmful bacteria (along with the desirable ones) and leaves a milk which has precisely the same flavor as raw milk.

While it is too early yet to say that the process is an unqualified success, it is believed that a description of the Electropure system of treating milk will be of interest to the readers of this jouranl.

Although this article is not to be taken as an endorsement of the system, it is indeed interesting as indicating what the future may hold in the way of the possibilities of this treatment.

Modern civilization owes a tremendous debt to the process known as milk pasteurization. The removing of disease carriers from milk has been the purpose of pasteurization, and this has been accomplished with a reasonable degree of surety.

It is only natural that little attention should be directed towards the faults of pasteurization as long as it was accomplishing its purpose. However, with the advent of the 1927 type of discriminating customer, milk dealers have realized that pasteurization as now

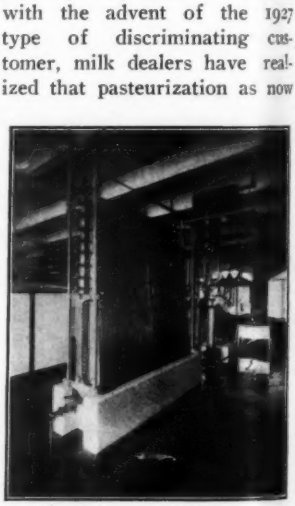


Plate 1. 50 Kilowatt Electropure Installation at New England Creamery Products Company at Somerville, Mass.

Equipped with Electric Motor

NEW Low Model MELOTTE

30 days FREE TRIAL

NOW!—for the first time—the farmers of America have a chance—if they act quick!—to see and USE, on 30 Days Free Trial, the NEW Low Model Belgian Melotte Cream Separator.

This great NEW Low Model Melotte retains ALL the best features of the World's Leading Separator, including the famous Self-Balancing Melotte Bowl that NEVER gets out of balance and ALWAYS skims clean—*plus*—many big NEW features that give you greater convenience and MORE all-round separator satisfaction than has ever been known before.

If you have electric power be sure to get the model equipped with electric power; if not get the regular model—you can easily add this motor equipment as soon as you're ready. Send for big Free Catalog Now!

$7.50 a Month

Remember—you have a 30 Days Free Trial—absolutely free, and with NO obligation to buy. Then, after the free trial—you suit your own convenience about payments.....cash, if you prefer.....OR.....pay only $7.50 down and only $7.50 a month.....NO interest charges.....NO financing charges.....NO extra charges of any kind. Fill in—cut out—mail the coupon below now—before you lay this paper down. This will not obligate you to buy anything—BUT—will bring you the most wonderful separator news you have ever heard.

Ball Bearings

of course the NEW Melotte Separator has Ball Bearings. The Melotte separator has always had ball bearings. It has bearings had ball bearings for 40 Years

Mail This Coupon Now for Free Book

The Melotte Separator, H. B. BABSON, U. S. Manager
2843 W. 19th St., Dept. 95-67, Chicago, Ill.
2445 Prince St., Berkeley, Calif.

Please send me at once full details about the NEW Low Model Melotte Cream Separator, your Special Low Introductory Price to first buyers, and your $7.50 offer after 30 Days' Free Trial
(Print Your Name and Address plainly)

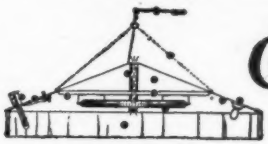
Name .....

Post Office .....

How many cows
R. F. D..... State .....do you milk? ....

MILKING MACHINE Yes, we have a milker which is bound to interest you—Melotte quality—reasonably priced—terms. Check here if interested. ☐

Poultrymen Are Buying



SMITH BROS.

Electric Brooder

LOW PRICES—BIG VALUE

24 in. $12.00
(100 to 125 chicks)

32 in. 16.00
(200 to 250 chicks)

42 in. 20.00
(350 to 500 chicks)

56 in. 24.00
(600 to 1000 chicks)

BECAUSE

It's the easiest, safest, simplest brooder yet designed. Needs no attention; once started it automatically regulates itself. Maintains the desired temperature day or night without any attention. No fire hazard; no worries; no fueling; no dust or ashes. It is clean, sanitary and safe.

Write for complete circular—It's FREE

Information on wattage, current consumption and installation will gladly be sent to those who make request.

Electricity is only as useful as you make it. If you intend brooding chicks—do it electrically. Install a Smith Brothers' Electric Brooder or as many as are needed and "push the button." You will wonder why you didn't do so before.

WELLINGTON J. SMITH COMPANY
600 DAVIS-FARLEY BLDG. CLEVELAND, OHIO
Exclusive Sales Agents for Petersime Electric Incubators

Only $38.75 For latest HAMMER TYPE FEED MILL

Run by 2 H.P. Electric Motor or 2½ H.P. Gasoline Engine. Grinds 35 bushels shelled corn per hour. Runs slow—grinds fast. No burrs to replace. Nails, bolts and wire can't damage it. Screens changed without stopping mill.

PRATER MILL Does best grinding, is lowest in first cost and operating cost—is durable and simple. Endorsed by Electric Power Companies. Can be started fully loaded without causing line disturbance.

Made in Three Sizes. Capacities 35 to 85 bushels shelled corn per hour. 2 H.P., price $38.75; 3 H.P., price $44.25; 5 H.P., price $65. Can be furnished equipped with Fan Blower and pipe for elevating feed up to 40 ft. Also complete with Electric Motor, mounted as unit with Mill. Write for catalog (2).

PRATER PULVERIZER CO., 1309 N. Kostner Ave., Chicago

Also makers of **Blue Streak Mills,** large capacity Hammer Type, moderate speed. Grinds roughage as well as grain—for Fordson or equal power.

GILLETTE

Portable Electric Clipping and Grooming Machines
Hanging and Pedestal Types

Operated on the light circuit furnished by any Electric Light & Power Co., or on any make of Farm Lighting Plant.

The convenience of the Gillette Portable Electric Clipping and Grooming Machines appeals to every progressive stockman, farmer, stable owner, veterinarian and dealer of dogs. Attached to an ordinary lamp socket, it is instantly ready for work. No mechanical experience required to install or operate them.

Price list on request.

Gillette Clipping Machine Co., Inc.
129 West 31st Street, Dept. 11, New York City

practised will not satisfy their customers.

Faults of Pasteurization

The main faults of pasteurization from the standpoint of the consumer are:

1. The destroying of the natural milk taste.

2. An occasional objectionable "scorched" taste.

3. A possibility that pasteurization is not complete.

4. Destruction of beneficial bacteria as well as the harmful.

From the standpoint of the milk dealer pasteurization is objectionable because:

1. It requires considerable time.

2. A large plant and comparatively expensive equipment are necessary.

3. It is frequently expensive.

4. Pasteurization may not be complete.

Most of these items are self-explanatory.

The thoroughness of the pasteurization process is oftentimes impaired because the range between the correct temperature and the burning temperature is so small that a sufficiently highly temperature is not maintained.

Applying Electricity

For many years research engineers have been studying methods of applying electricity to a process which would give a "germ-free" milk without the disadvantages of pasteurization. The Electropure process of milk treating is the result of their labors. In this process raw milk is passed between two electrodes. The milk becomes a part of the electrical circuit, and due to the electricity pass-

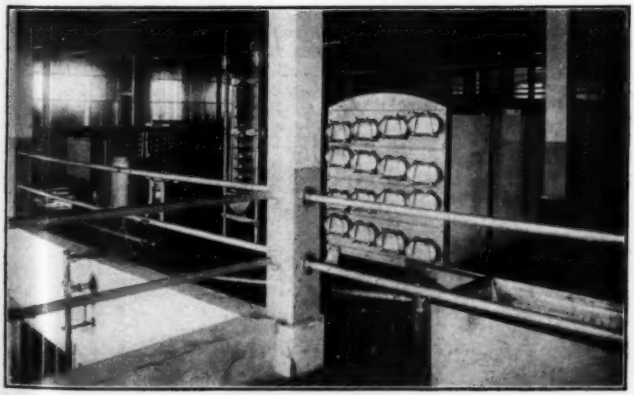


Plate 2. Steam Pasteurizing Equipment at the New England Creamery Products Company of Somerville, Mass.

ing through it, its temperature is raised to about 160° F. The treated milk then flows through a pre-heater where it raises the temperature of the incoming milk to around 130° F. When the treated milk leaves the pre-heater, it has given up most of its heat to the milk yet to be treated. In this way the power input to the system is kept at a minimum, and the cooling surface necessary for the treated milk is reduced. The accompanying diagram shows the steps taken in the process.

Description of System

"A" is a surge tank which is supplied by a gravity system. The surge tank keeps a constant pressure on the motor operated Pump "B". Pump "B" drives the raw milk through the pre-heater and through the twin filter system. In the pre-heater the temperature of the raw milk is raised to about 130° F. by coming in contact with pipes over which milk already treated is flowing.

From the twin filters the milk passes between the electrodes of the Electro unit. Here the temperature of the milk is raised to 160° F. by the passage of 220-volt, 60 cycle alternating current. From the Electro unit the milk is again taken to the regenerative cooler where it serves to heat the incoming milk, and is itself cooled.

Power Required

The power required to treat milk is very low. The Electropure systems are made in two sizes—400 and 600 gallons per hour capacity. The 400-gallon machine is rated at 35 kw., and the 600-gallon size at 50 kw. From this it is evident that 35 kw.-hr. will treat 400 gallons in the small size, and 50 kw.-hr. will treat 600 gallons in the small size, and 50 kw.-hr. will treat 600 gallons in the large size. This means a power consumption of .085 kw. hr. per gallon of milk treated.

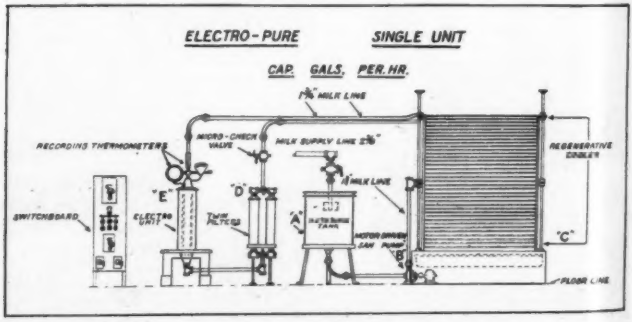


Diagram Showing Layout of Typical Installation of Electropure Milk Sterilizing Apparatus

A Practice That Will Pay For Electricity on the Farm

Clipped cows give more milk, cleaner milk and better milk and yield a large net profit. Clipping saves endless grooming. Keeps cows skin in healthy condition. Because contented and comfortable they give more and better milk.

Authorities Point to Clipping of Milk Cows as a Necessary Practice on Up-to-Date Dairy Farms

Most of the dirt in the milk drops from the cow into the bucket. Clipping stops this. Once in the milk, bacteria cannot be strained out. Keep them out by keeping your cows thoroughly cleaned by clipping. Then, they are cleaned by simply wiping with a damp cloth.

The Stewart Electric Clipping Machine

The Stewart Electric Clipping Machine quickly pays for itself in added milk profits. Easy to use. Clips fast. Makes better animals of your cows, horses and mules. Can be had in Pedestal or Overhead types. Easily moved about and plugged in on any electric light socket.

We are the world's largest makers of clipping and shearing machines. Write for our complete illustrated catalog which describes both hand operated and power driven clipping and shearing machines. No obligation on your part.

CHICAGO FLEXIBLE SHAFT COMPANY

5524 Roosevelt Road, Chicago

38 Years Making Quality Products

You Fellows On The Farm who want BIG PAY Get into ELECTRICITY

$3,500 to $10,000 a Year is Easy

$12 to $30 a day—$70 to $200 a week—$3,500 to $10,000 a year—that's the pay of the Trained Electrical Man—the man who can get action out of every piece of farm electrical equipment. And thousands of men like this are needed in the farming districts everywhere. It's the greatest opportunity ever heard of for you fellows who know farming. It's your great chance to jump into the Big Pay field of Electricity—to say goodbye forever to small wages—to train for the Big Pay work in this Big Pay farm field. Why don't you do it? Thousands of my "boys" are making $400 to $900 a month! So can you! I'll show you how.

I'll Train You at Home Earn While Learning

I'll train you at home—in your spare time, without interfering with your regular work. You'll learn Electricity every day with my now famous "Work Sheet" and "Job Ticket" Methods, which guarantees you simplified, practical training along work shop lines—training so complete—so thorough, that in a few short months you're ready to step into Electricity and be a Big Pay Man in this Big Pay field.

Money Back Guarantee

You don't need "education" to learn with me. If you can read and write, that's enough. I show you how to make good money while learning. I give you, without extra cost, six Big Outfits of tools and apparatus to work with—and I guarantee to return your money if you're not satisfied.

If Making Less Than $70 a Week—Investigate

Don't wait a minute! Find out today why the "Cooke Trained Man is the Big Pay Man everywhere." Understand, I not only train you thoroughly in farm electricity, but I also fit you to do any kind of electrical work anywhere! Find out how my Training will boost your pay. Get my big FREE Pay-Raising Book. Clip, sign and mail the coupon for it now.

L. L. Cooke, Chief Instruction Engineer

L. L. COOKE SCHOOL OF ELECTRICITY

Dept. 947, 2150 Lawrence Ave., Chicago, Ill.

$1.10 an Hour

Dear Teacher:

I was working on a farm for $40 a month. Now I am working for Kohler receiving $1.10 an hour. I owe my success to you.

RAY K. BRYAN, 1601 Blake Street, Denver, Col.

$300 a Month

Dear Mr. Cooke:

Am now service man for Delco at $1.00 an hour. And you get the credit.

C. L. ABEL, 1012 W. 8th St., Oklahoma City, Okla.

Hundreds of Men I have trained are now making **$70 to $200 a week**

If you are making less than $70 a week **INVESTIGATE!**

FREE BOOK COUPON

L. L. COOKE,
Dept. 947, 2150 Lawrence Ave., Chicago.

Send me your big FREE book, and tell me all about your great Home Study Course in Electricity.

Name .....

Address .....

City ..... State .....

The Cooke Trained Man is the "Big Pay" Man

The accompanying photographs show an installation of Electropure at the New England Creamery Products Company of Somerville, Massachusetts. This company has one cream Electropure outfit and one milk Electropure outfit. Both of these units are of the larger size—50 kw. capacity, and both are giving complete satisfaction.

Plate No. 1 shows part of the Electropure equipment of this company. Plate No. 2 shows steam pasteurizing equipment. The difference in required floor space is very pronounced.

Professor Samuel C. Prescott, head of the Biology and Public Health Department of Massachusetts Institute of Technology, recently gave an address entitled, "Milk, Its Sanitation and Relation to Public Health." In this talk Professor Prescott discussed the tests carried on by the Massachusetts Institute of Technology on the Electropure System. In his references to the Electropurification of milk he said that this process kills pathogenic organisms, retains natural milk flavor, cream line, and has excellent keeping qualities.

Cheap Imported Lamps Are Expensive

Despite their low price cheap imported electric lamps of the carbon type are dear in the end, says the lamp committee of the National Electric Light Association in a report advising the American public against their use.

Many of the imported lamps are tinted like a tungsten and bear no mark to indicates that they are of the carbon filament type. They are a poor buy, says the committee, because the same amount of illumination can be produced by tungsten filament lamps consuming considerably less current.

Electrically Bred Chicks Prove Stronger

Not only does electricity now play the leading role in the first act of the life cycle of many chickens, but the chicks that are coaxed from their shells by electrically operated incubators are coming to be preferred by poultrymen. This deduction is made from figures recently made available on the mortality rate of over two million chicks that were hatched in an electric incubator and shipped to twelve western states.

The total number of chicks reported upon was 2,754,906 and the net loss reported by the customers to whom they were sent was 185,813 chicks for the first fourteen days after receipt at brooder house, or 6.7 per cent, a low percentage. These chicks were sent to over two thousand different poultrymen in twelve different states using practically every known kind of brooding house equipment.

Necessarily the breeding stock from which these chicks came must have been in the best of health, but the results of compilation also demonstrates the efficiency of electrically operated incubator equipment.

Household Hints

Some Timely and Interesting Suggestions of Value to the Farm Housewife.

Flies and Fans

BY SALLY E. DAVIDSON

While flies and fans have nothing in common except their period of simultaneous activity, if you have them both you are probably interested to know how the one can affect the other.

Most of us have frequently observed the breezes of the fan holding flies at bay in bake-shops and other places where foods are displayed, but I doubt whether many of us have ever thought of applying the process for our own comfort. I admit that I for one was driven to it.

One year we spent a vacation in a house in the hills. The owner of the house assured us that screens were not a necessity there because there were absolutely no mosquitoes, and questioned about flies, she said there were "not many." Everything being relative one cannot accuse her of intentional misrepresentation, but I am here to say there proved to be too many flies for me. With the first light of dawn it was necessary to abandon sleep in pursuit of flies. I stood this for about a week and then it became a question of either moving or finding a cheap cure for keeping the flies at bay. We had ceased trying to eliminate them, because no sooner had we squirted a quart of death fume than a new contingent would arrive.

The Bright Idea

In desperation one morning my eyes lighted on one of the two electric fans which we had had the wit to bring along.

"Ha," said I, "if you are successful in protecting food, perhaps you may also oblige me."

I connected the fan to the nearest electric convenience outlet, set the fan going, and in this way the current of air prevented the flies from approaching me and I slept in peace.

(This is also a mighty fine method of keeping flies off the dinner table during the harvesting season when the harvesting or threshing crew keep the screen doors swinging and let the flies in.)

An electric egg boiler is a simple table device for heating by means of an electric heating element and a small quantity of water into which eggs can be lowered in a small receptacle. Some larger egg boilers are equipped with a clock arrangement by means of which the eggs are lifted out automatically when they have boiled long enough. This is quite a handy little device for preparing food for youngsters or during hot summer days when light lunch only is wanted.

Electric Pump Jack

Running water any where.

Made in ¼ and ½ Horse Power Sizes.

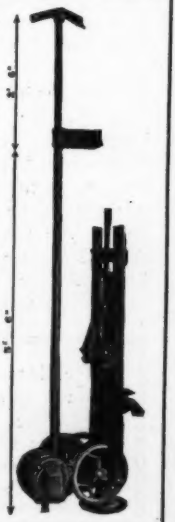
Write for catalog.

Milwaukee Air Power Pump Co.

8-10-12 Keefe Ave., Milwaukee, Wis.

For all kinds of weather —of course!

Monitor Electric Pump Jack



JUST as water is a year-round necessity, so the "Monitor" is a year-round practical pumping unit for the farm. It is made for outdoor all-weather service.

With all-gear drive and built-in motor, it is compact and weather-proof, requiring no attention except oiling. The inside gears run in a flood of oil, almost noiselessly, and the shaft and bronze-lined bearings of the motor need new oil but twice a year.

THE DEPENDABLE "MASTER MOTOR"

We have selected the Master Motor for the Monitor Pump Jack because it has liberal dimensions, starts heavy loads, carries big overloads when necessary, and runs cool. Its dependability is proven. The steel post is wired, fitted with double pole switch and fused for complete safety.

QUICKLY INSTALLED

—just a matter of minutes for the handy man. We furnish complete instructions.

Price f.o.b. Evansville, complete with ½ h.p. Master Motor and all fittings ready to attach to your pump.....$80

Write for free circular

BAKER MANUFACTURING COMPANY

Established 1873

EVANSVILLE, WISCONSIN

QUESTIONS AND ANSWERS

Independent Plant vs. Central Station

Question: I have been told that it would cost me less to install and use an independent plant than does service from the local power company which has run lines across our farm. Will you give me your opinion on this.

Answer: You do not state what equipment you intend using in connection with your electrical supply, nor do you state the cost of service furnished by your power company. The following figures, which are typical, will therefore be given and you can draw your own conclusion. Current from an independent plant will probably cost you in the neighborhood of 25 cents per kilowatt hour. This cost may be slightly less on bigger units such as would be required to drive motors in connection with operating farm equipment, i.e., grinders, etc. But if you put in a large plant for this service you have a very high initial cost installation.

For operating a number of farm appliances, central station service is unquestionably far cheaper and far more dependable.

In some cases, however, where only lights in a house are to be used and where the cost of making connection from the power line to your house would be considerable, it may be cheaper to install a private plant. Consult your power company regarding this and they will gladly give you an unbiased opinion.

* * *

One Wire Grounded

Question: Why is it when I touch one of the wires of our electric system I get a shock, while the other wire seems to have no electricity in it.

Answer: The wire which gives you no shock is "grounded," that is, it is connected to the earth by a "ground wire." This wire is then at the same potential (voltage) as the earth. As it requires a difference in voltage to make electricity flow, no current flows through your body to the ground when you touch this wire.

Readers of "Electricity on the Farm" are invited to submit questions for answering in the columns of this magazine. Questions should be confined to electrical subjects and be addressed to "Questions and Answers Department, Electricity on the Farm, 225 West 34th Street, New York, N. Y."